

A number of push rods **50** are positioned in the passages **30**, as shown pictorially in **FIG. 1** and are in alignment with a rocker arm **40** and it in turn with a yoke **54** such that each pair of valve are lifted simultaneously from the head **20** in sequence producing a timed cyclic allowing function of the reciprocating engine.

It will be noted that the positioning of the valves **36** and **38** along with the spark plug **52** in the hole **32** is critical to the invention and is part of the novelty, along with the ability to utilize the remainder of the engine without modification.

While the invention has been described in complete detail and pictorially shown in the accompanying drawings, it is not to be limited to such details, since many changes and modifications may be made in the invention without departing from the spirit and the scope thereof. Hence, it is described to cover any and all modifications and forms which may come within the language and scope of the appended claims.

What is claimed is:

1. An improved head assembly for Harley Davidson engine having an integral camshaft and push rod system comprising:
  - a head having a pair of exhaust valve ports with seats and a pair of intake valve ports with seats for each cylinder, also a plurality of push rod passages in linear alignment with the engine camshaft, and a threaded spark plug hole centrally located between the ports, the general area around the ports with the threaded hole recessed with the areas underneath and between the engine forming a combustion chamber.
  - a pair of exhaust valves disposed transversely parallel and having angularity with each cylinder centerline in said engine and contiguous with the appropriate port for relieving the combustion gases on an exhaust stroke.
  - a pair of inlet valves disposed angularly with respect to each cylinder in said engine contiguous with the appropriate port for introducing a combustible mixture of fuel and air into the engine on a suction stroke.

- a plurality of rocker arms and valve springs , the arms causing said valve and the springs surrounding the valve stem for lifting the valve and returning them into contact with the valve seats under the influence of the springs at the appropriate timing.
  - a pair of rocker arm shafts unitedly retaining the rocker arms in rotatable linear containment allowing each set of valves to react in sequence for operation of the engine.
  - a plurality of push rods drivingly communicating between the engine camshaft and said rocker arms such that each pair of valve are lifted from the head in a sequence producing a cyclic action allowing the engine to operate.
  - a yoke disposed between the rocker arm and bridging a pair of valves to provide the latter of equal lifting from the head and equal returning to the head.
2. An improved head assembly for an internal combustion gasoline engine having an integral camshaft and push rod system comprising:
- a head having a pair of exhaust valve ports with seats and a pair of intake valve ports with seats for each cylinder, also a plurality of push rod passages in linear alignment with the engine camshaft, and a threaded spark plug hole centrally located between the ports, the general area around the ports with the threaded hole recessed with the areas underneath and between the engine forming a combustion chamber.
  - a pair of exhaust valves disposed transversely parallel and having angularity with each cylinder centerline in said engine and contiguous with the appropriate port for relieving the combustion gases on an exhaust stroke.
  - a pair of inlet valves disposed angularly with respect to each cylinder in said engine contiguous with the appropriate port for introducing a combustible mixture of fuel and air into the engine on a suction stroke.
  - a plurality of rocker arms and valve springs, the arms causing said valve and the springs surrounding the valve stem for lifting the valve and returning them into contact with the valve sets under the influence of the springs at the appropriate timing.

- a pair of rocker arm shafts unitedly retaining the rocker arms in rotatable linear containment allowing each set of valves to react in sequence for operation of the engine.
  - a plurality of push rods drivingly communicating between the engine camshaft and said rocker arms such that each pair of valves are lifted from the head in a sequence producing a cyclic action allowing the engine to operate.
  - the utilization of the standard Harley Davidson rocker arm disposed in the same position and location as the standard heads.
3. An improved head assembly for an internal combustion gasoline engine having an integral camshaft and push rod system comprising:
- a head having a pair of exhaust valve ports with seats and a pair of intake valve ports with seats for each cylinder, also a plurality of push rod passages in linear alignment with the engine camshaft, and a threaded spark plug hole centrally located between the ports, the general area around the ports with the threaded hole recessed with the areas underneath and between the engine forming a combustion chamber.
  - a pair of exhaust valves disposed transversely parallel and having angularity with each cylinder centerline in said engine and contiguous with the appropriate port for relieving the combustion gases on an exhaust stroke.
  - a pair of inlet valves disposed angularly with respect to each cylinder in said engine contiguous with the appropriate port for introducing a combustible mixture of fuel and air into the engine on a suction stroke.
  - a plurality of rocker arms and valve springs, the arms causing said valve and springs surrounding the valve stem for lifting the valve and returning them into contact with the valve seats under the influence of the springs at the appropriate timing.
  - a pair of rocker arm shafts unitedly retaining the rocker arms in rotatable linear containment allowing each set of valves to react in sequence for operation of the engine.

- a plurality of push rods drivingly communicating between the engine camshaft and said rocker arms such that each pair of valves are lifted from the head in a sequence producing a cyclic action allowing the engine to operate.
  - an exterior face of the exhaust ports and an exterior face of the intake ports disposing the configuration and location of the standard Harley Davidson.
4. An improved head assembly for an internal combustion gasoline engine having an integral camshaft and push rod system comprising:
- a head having a pair of exhaust valve ports with seats and a pair of intake valve ports with seats and a pair of intake valve ports with seats for each cylinder, also a plurality of push rod passages linear alignment with the engine camshaft, and a threaded spark plug hole centrally located between the ports, the general area around the ports with the threaded hole recessed with the areas underneath and between the engine forming a combustion chamber.
  - a pair of exhaust valves disposed transversely parallel and having angularity with each cylinder centerline in said engine and contiguous with the appropriate port for relieving the combustion gases on the exhaust stroke.
  - a pair of inlet valves disposed angularly with respect to each cylinder in said engine contiguous with the appropriate port for introducing a combustible mixture of fuel and air into the engine on a suction stroke.
  - a plurality of rocker arms and valve springs, the arms causing said valve and the springs surrounding the valve stem for lifting the valve and returning them into contact with the valve seats under the influence of the springs at the appropriate timing.
  - a pair of rocker arm shafts unitedly retaining the rocker arms in rotatable linear containment allowing each set of valves to react in sequence for operation of the engine.
  - a plurality of push rods drivingly communicating between the engine camshaft and said rocker arms such that each pair of valve are lifted from the head in a sequence producing a cyclic action allowing the engine to operate.
  - a standard hydraulic valve lifter disposed in the standard engine location communicating the engine camshaft and each pushrod for the automatic

adjustment for zero clearance between the rocker arm and the newly paired valves.